COUPON A1A

DATA SHEET

Job No.: 03-029
Engineer: M. Chatham

Report No.: SRC-DP-086
Date: June 30, 2003

Part 1. PART DESCRIPTION

Part Type: Test Coupons	Basic Shape: Flat
Surface Coatings/Texture: Profiled	Overall Dimensions (mm): 7.75 x 3.75 x 0.375

Part 2. MATERIAL DESCRIPTION

Material Family: Aluminum	Material Type: 7075-T7351 per AMS 4078

Part 3. EQUIPMENT DESCRIPTION

Manufacturer: Sic Marking	Equipment Type: Dot Peen Marker
Model Number: C-151ZA	Serial Number: 23566
Software Revision: e6-4a04	

Part 4. MARKING PARAMETERS

Stylus Dia (mm): 4		Marking Speed: 0		
Tip Angle: 120°				
Depth of Mark (in):	0.002	0.004	0.008	0.012
Force Level:	3	5	7	8 (2 passes)
Stylus to Part Gap:	1	1	5	7 (2 passes)
Marking time (seconds):	18	27	45	120

Part 5. SYMBOL PARAMETERS

Symbol Type: Data Matrix		Number of Characters: 10		
Rows x Columns: 22 x 22		ECC Level: 200		
Type: Square		Style: Normal		
Depth of Mark (in):	0.002	0.004	0.008	0.012
Symbol Size (in):	0.21	0.37	0.67	0.98
Cell Size (in):	0.010	0.017	0.030	0.045

Part 6. READER PARAMETERS

Processor: DMx Auto ID		Camera: RVSI CM4000		
Camera Gain: ½ turn CW		Gamma: 1.0, MGC, FRM		
Lens Type: Tamron 701178		Lens Size: 1:2.8, 50mm, Ø25.5		
Software Version no.: 1.5.0.20		Trigger Method: Manual		
Field Mode (Low Density): No		Frame Mode (High Density): Yes		
Depth (in):	0.002	0.004	0.008	0.012
Aperture Setting:	12	16	16	16
Extension Tube (mm):	30	15	10	5

Focus Setting:	0.8	0.8	3.1	1.4
Camera to Target Distance (mm):	124	180	280	399
Symbol Size (Pixels):	376 x 378	381 x 385	389 x 396	378 x 385

Part 7. LIGHTING PARAMETERS

Light manufacturer:	NER	Light type:	DOAL-50-LED
Light P/N:	010-200700	Light Color:	Red
Lighting Angle:	Parallel to part surface	Filter Type:	None

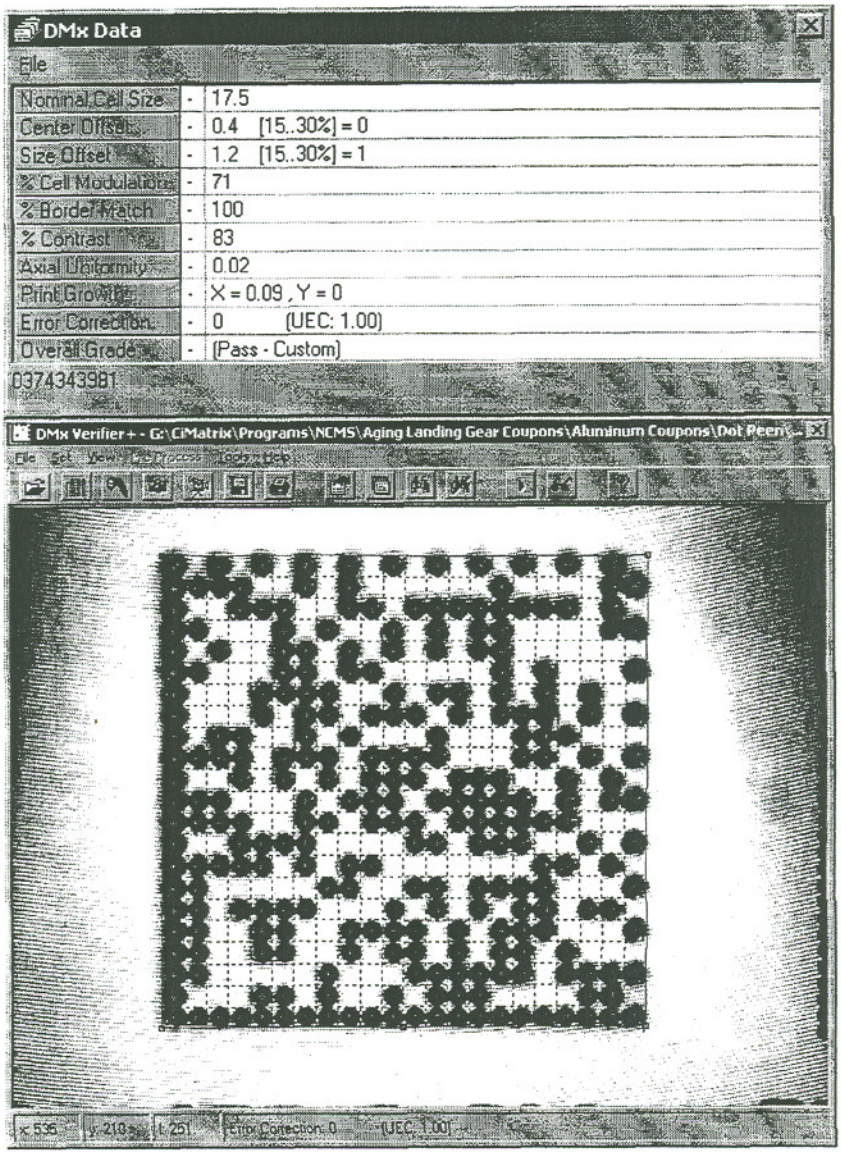
Depth of Mark (in):	0.002	0.004	0.008	0.012
Lighting Distance (mm):	69	80	80	80

Part 8. DECODING RESULTS

		Nominal Cell Size	Center Offset	Size Offset	Cell Modulation	Border Match	Contrast	Axial Uniformity	Print Growth (X)	Print Growth (Y)	Error Correction
A1A-17											
3876939696	0.002	17.3	2.8	3.7	18	96	57	0	-0.09	-0.17	4
9638709263	0.004	17.3	2.3	17.6	22	99	78	0	0.03	0.25	2
4608240041	0.008	17.8	0.9	3.4	80	100	82	0.02	0.11	0.11	0
0306010914	0.012	17.4	0.5	2.2	76	100	83	0	0.08	0	0
A1A-18											
2916015960	0.002	17.1	3.7	4.8	40	99	57	0	-0.06	-0.02	11
7540047118	0.004	17.4	0.2	0.0	39	100	70	0	-0.23	-0.21	0
8545507258	0.008	17.7	0.4	1.7	51	100	83	0.02	0.08	0.06	0
0374343981	0.012	17.5	0.4	1.2	71	100	83	0.02	0.09	0	0
A1A-19											
8214872322	0.002	17.2	2.3	2.7	43	100	59	0	-0.09	-0.06	3
6249475777	0.004	17.4	0.0	0.0	39	100	71	0	-0.23	-0.20	0
4028524204	0.008	17.9	0.5	3.0	54	100	83	0	0.07	0.03	0
7481103274	0.012	17.5	0.2	1.6	80	100	83	0.02	0.04	0	0
A1A-20											
2309883702	0.002	17.3	1.9	4.3	36	100	60	0	-0.08	-0.15	3
0776926648	0.004	17.4	0.9	6.9	23	100	78	0	0.04	0.18	2
3009740725	0.008	17.7	1.0	2.5	44	100	83	0.02	0.14	0.09	0
7538020209	0.012	17.4	0.9	2.9	84	100	81	0.02	0.04	-0.02	0

Part 9. Symbol Quality Verification

The following image is a screen shot of the RVSI Data Matrix Verifier. This software tool is used to 'grade' the quality of a mark and unlike the standard "AIM Verification" available from other reader companies (which is designed to read paper labels), it provides feedback related to the direct marking of parts on any material. Please see the attached document that explains RVSI Verification more thoroughly.



Appendix A

Direct Part Mark Verification for Data Matrix Codes

The AIM symbology specification calls out the Data Matrix verification methodology as the measure of: Symbol Contrast; Print Growth; Axial Non-uniformity; and, Unused Error Correction. A final grade of the mark quality will be the lowest grade given in the previously cited categories. The AIM method follows what was done for Bar Code Verification many years ago and has validity where Matrix Codes are applied to labels (essentially we are measuring the label printer quality).

With directly marked parts, this AIM method misses several key measures and will almost always report a final score based on the Symbol Contrast score, which with most direct marks will be very low and meaningless as it is not something we can control (peening a metallic surface seldom adds any contrast). If a company relies exclusively on AIM parameters they will likely fail completely readable marks and accept some marks that will later prove to be unreadable.

To compensate for this shortcoming RVSI developed and offers a custom verification grading method where all the AIM parameters can be chosen (or not, as in the case of Symbol Contrast) as well as many more measurements that are useful for identifying problems common to specific marking methods. This enhanced level of analysis provides what we call ***diagnostic verification***: information that can be used to consistently improve the marks *as they are made*.

With Ink Jet, Dot Peen and Laser marks (the 3 most often used methods for marking Data Matrix on parts) the two most important aspects to measure are the "normalized" Center Offset and Size Offset values. These measures are made of all the ON cells (those actually marked. vs. the spaces left unmarked) within the borders of the code. The scores are "normalized" because with a Data Matrix code if all cells are shifted the same amount, or are smaller or larger by the same amount, we really don't have to fix anything—most readers will deal with that "scale" change and no marker maintenance is necessary. However, if we have a difference in cell position within the code we have an indication that service is needed (i.e. clogged ink jet nozzles, plugged air pressure filters, worn bushings). The same is true of Size Offset, typically all ON cells of a matrix would be the same size, and a variation in size could indicate, for example, pressure problems on a pin stamp marker and power management or mask problems on a laser.

The addition of these mark analysis parameters, available only on RVSI's verification products, provides effective diagnostics of marking problems. In fact, a number of the leading marking companies are incorporating this technology into their products to guarantee their customer remarkable reliability and consistency in creating good data matrix marks, highlighting service requirements, and identifying corrective actions required to ensure marking excellence. [Note also that RVSI has also developed the only verifier customized to the unique parameters employer by the Aerospace Industry's IAQG in its ATA 2000 Specification.]

RVSI has attacked the identification of parts for traceability and process control as a system problem that requires a system solution. The right marking methods must first be chosen (the SRC has validated over 50 methods of marking parts); the use of Verification after marking to confirm the mark quality is a must (provided the proper measurements are made); application engineering to accommodate the environmental conditions encountered at the read stations, both fixed and hand held, must be taken into consideration (and they should both use the same algorithmic approach to minimize integration); and finally the communication of the data must support the factory environment and traceability needs of the user.

We refer to this system approach as the MVRC^{sm} Methodology (Mark, Verify, Read, and Communicate). It is only available from RVSI.

DATA SHEET
Job No.: 03-029
Engineer: M. Chatham

Report No.: SRC-L-309
Date: June 30, 2003

Part 1. PART DESCRIPTION

Part Type:	Test Coupons	Basic Shape:	Flat
Surface Coatings/Texture:	Profiled	Overall Dimensions (mm):	7.75 x 3.75 x 0.375

Part 2. MATERIAL DESCRIPTION

Material Family:	Aluminum	Material Type:	7075-T7351 per AMS 4078

Part 3. EQUIPMENT DESCRIPTION

Marking Company:	Virtek Laser Systems, Inc.
Marking Engineer:	Andrew Money

Part 4. MARKING PARAMETERS

Marking Speed:	250 mm/sec	Frequency:	8000 Hz	
Laser Power:	22 amps			
Depth of Mark (in):	0.002	0.004	0.008	0.012
Marking Time (seconds):	23	58	138	246

Part 5. SYMBOL PARAMETERS

Symbol Type:	Data Matrix	Number of Characters:	10
Rows x Columns:	22 x 22	ECC Level:	200
Type:	Square	Style:	Normal
Symbol Size (in):	0.55	Cell Size (in):	0.025

Part 6. READER PARAMETERS

Processor:	DMx Auto ID	Camera:	RVSI CM4000
Camera Gain:	½ turn CW	Gamma:	1.0, MGC, FRM
Lens Type:	Tamron 701178	Lens Size:	1:2.8, 50mm, Ø25.5
Software Version no.:	1.5.0.20	Trigger Method:	Manual
Field Mode (Low Density):	No	Frame Mode (High Density):	Yes
Aperture Setting:	22	Extension Tube (mm):	10
Focus Setting:	1.0	Camera to Target Distance (mm):	237
Symbol Size (Pixels):	380 x 379		

Part 7. LIGHTING PARAMETERS

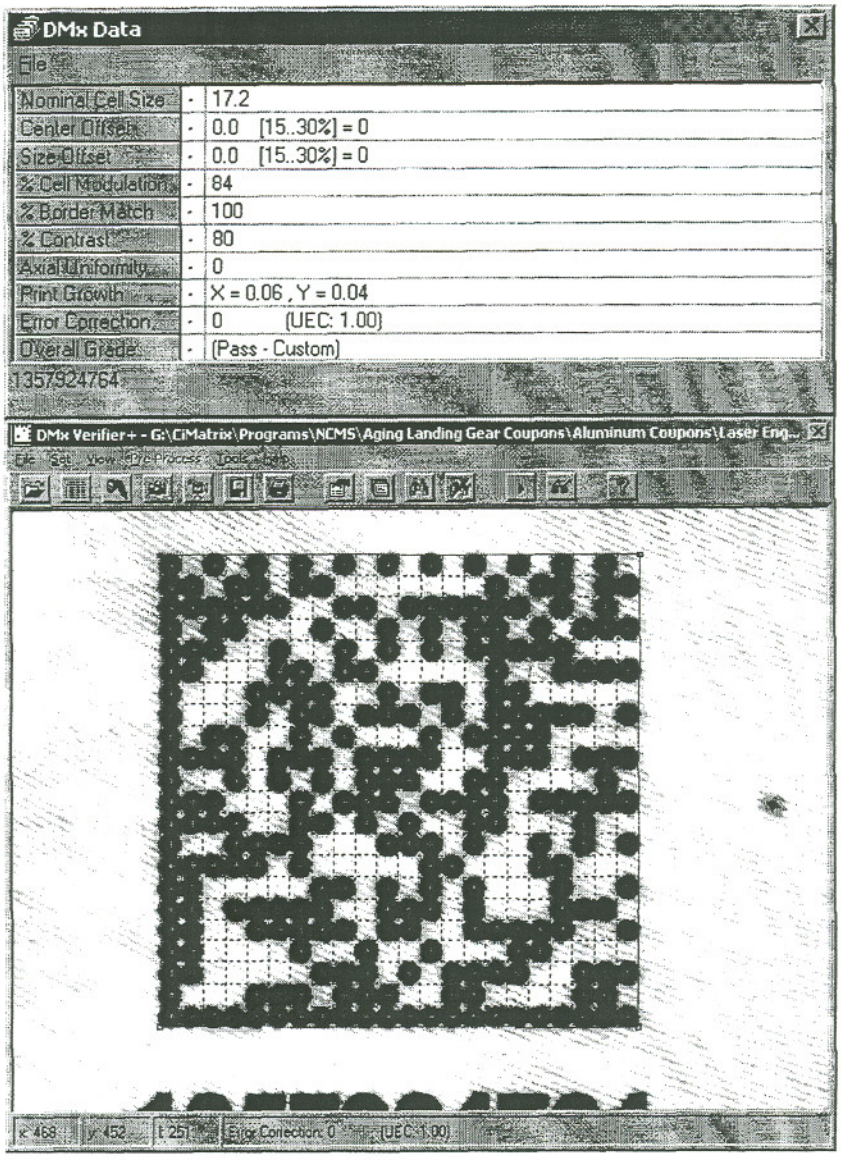
Light manufacturer:	NER	Light type:	DOAL-75-LED
Light P/N:	010-200500	Light Color:	Red
Lighting Angle:	Parallel to part surface	Filter Type:	None
Lighting Distance (mm):	42		

Part 8. DECODING RESULTS

		Nominal Cell Size	Center Offset	Size Offset	Cell Modulation	Border Match	Contrast	Axial Uniformity	Print Growth (X)	Print Growth (Y)	Error Correction
A1A-17											
1357924680	0.002	17.2	0.0	0.0	76	100	77	0	0.03	0.02	0
1357924707	0.004	17.2	0.0	0.0	80	100	78	0	0.05	0.05	0
1357924734	0.008	17.2	0.2	0.2	78	100	80	0	0.09	0.07	0
1357924761	0.012	17.2	0.2	0.2	75	100	79	0	0.09	0.06	0
A1A-18											
1357924683	0.002	17.2	0.0	0.0	90	100	76	0	0	-0.02	0
1357924710	0.004	17.2	0.0	0.0	90	100	78	0	0.02	0	0
1357924737	0.008	17.2	0.0	0.0	79	100	80	0	0.03	0.02	0
1357924764	0.012	17.2	0.0	0.0	84	100	80	0	0.06	0.04	0
A1A-19											
1357924685	0.002	17.2	0.0	0.0	87	100	76	0	0.02	0	0
1357924712	0.004	17.2	0.0	0.0	83	100	78	0	0.06	0.03	0
1357924739	0.008	17.2	0.0	0.0	63	100	78	0	0.14	0.12	0
1357924766	0.012	17.3	0.2	0.7	73	100	77	0	0.14	0.12	0
A1A-20											
1357924687	0.002	17.2	0.0	0.3	90	100	75	0	0	0	0
1357924714	0.004	17.2	0.0	0.0	90	100	76	0	0	0	0
1357924741	0.008	17.3	0.0	0.0	80	100	79	0	0.02	0	0
1357924768	0.012	17.2	0.0	0.0	82	100	78	0	0.04	0	0

Part 9. Symbol Quality Verification

The following image is a screen shot of the RVSI Data Matrix Verifier. This software tool is used to 'grade' the quality of a mark and unlike the standard "AIM Verification" available from other reader companies (which is designed to read paper labels), it provides feedback related to the direct marking of parts on any material. Please see the attached document that explains RVSI Verification more thoroughly.



Appendix A

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DATA SHEET
Job No.: 03-029
Engineer: M. Chatham

Report No.: SRC-CNC-001
Date: June 30, 2003

Part 1. PART DESCRIPTION

Part Type: Test Coupons	Basic Shape: Flat
Surface Coatings/Texture: Profiled	Overall Dimensions (mm): 7.75 x 3.75 x 0.375

Part 2. MATERIAL DESCRIPTION

Material Family: Aluminum	Material Type: 7075-T7351 per AMS 4078

Part 3. EQUIPMENT DESCRIPTION

Manufacturer: Servo Products Co.	Equipment Type: CNC Milling Machine
Model Number: Impact 2	Serial Number: I-01430CBS
Software Revision: 5.02(94)	

Part 4. MARKING PARAMETERS

Drill Bit Material: HSS	Marking Time (Seconds): 15 minutes
Drill Bit Dia (in): 1/16	Tip Angle: 118°
Feed Rate (ipm): 1.50	Speed (RPM): 3000

Part 5. SYMBOL PARAMETERS

Symbol Type: Data Matrix	Number of Characters: 10
Rows x Columns: 22 x 22	ECC Level: 200
Type: Square	Style: Normal

Depth of Mark (in):	0.002	0.004	0.008	0.012
Symbol Size (in):	0.3564	0.5148	0.7722	1.0450
Cell Size (in):	0.0162	0.0234	0.0351	0.0475

Part 6. READER PARAMETERS

Processor: DMx Auto ID	Camera: RVSI CM4000
Camera Gain: ½ turn CW	Gamma: 1.0, MGC, FRM
Lens Type: Tamron 701178	Lens Size: 1:2.8, 50mm, Ø25.5
Software Version no.: 1.5.0.20	Trigger Method: Manual
Field Mode (Low Density): No	Frame Mode (High Density): Yes

Depth (in):	0.002	0.004	0.008	0.012
Aperture Setting:	22	22	22	22
Extension Tube (mm):	15	10	5	5
Focus Setting:	0.55	0.8	0.8	1.5
Camera to Target Distance (mm):	170	228	335	417
Symbol Size (Pixels):	383 x 383	368 x 368	347 x 347	363 x 363

Part 7. LIGHTING PARAMETERS

Light manufacturer:	NER	Light type:	DOAL-75-LED		
Light P/N:	010-200500	Light Color:	Red		
Lighting Angle:	Parallel to part surface	Filter Type:	None		
Depth of Mark (in):	0.002	0.004	0.008	0.012	
Lighting Distance (mm):	64	45	70	95	

Part 8. DECODING RESULTS

		Nominal Cell Size	Center Offset	Size Offset	Cell Modulation	Border Match	Contrast	Axial Uniformity	Print Growth (X)	Print Growth (Y)	Error Correction
A1A-17											
9524974623	0.002	17.4	0.0	0.0	50	100	51	0	-0.05	-0.06	0
1276607580	0.004	16.7	0.2	0.3	77	100	52	0	-0.19	-0.18	0
4638258921	0.008	15.9	0.0	0.0	78	100	58	0	-0.10	-0.11	0
9610227327	0.012	16.5	0.0	0.0	82	100	63	0	0	0	0
A1A-18											
1787249936	0.002	17.5	5.0	5.8	50	100	53	0	-0.05	-0.08	0
8260488435	0.004	16.8	0.2	0.0	75	100	53	0	-0.12	-0.12	0
2242652223	0.008	15.9	0.0	0.8	85	100	59	0	-0.03	-0.04	0
6779980031	0.012	16.5	0.0	0.0	79	100	64	0	0.02	0.02	0
A1A-19											
1983908122	0.002	17.5	13.4	18.7	47	100	52	0	-0.24	-0.37	0
2526692356	0.004	16.8	0.2	0.0	80	100	54	0	-0.12	-0.14	0
6486358313	0.008	15.9	0.0	0.0	84	100	63	0	-0.11	-0.10	0
4518394282	0.012	16.5	0.2	1.1	78	100	68	0	-0.05	-0.06	0
A1A-20											
4694896041	0.002	17.5	0.0	0.0	49	100	53	0	0	0	0
2039952643	0.004	16.8	0.2	0.8	79	100	51	0	-0.14	-0.16	0
4401637474	0.008	15.9	0.0	2.3	82	100	61	0	-0.04	-0.04	0
1169583898	0.012	16.6	0.2	1.2	79	100	62	0	0	-0.02	0

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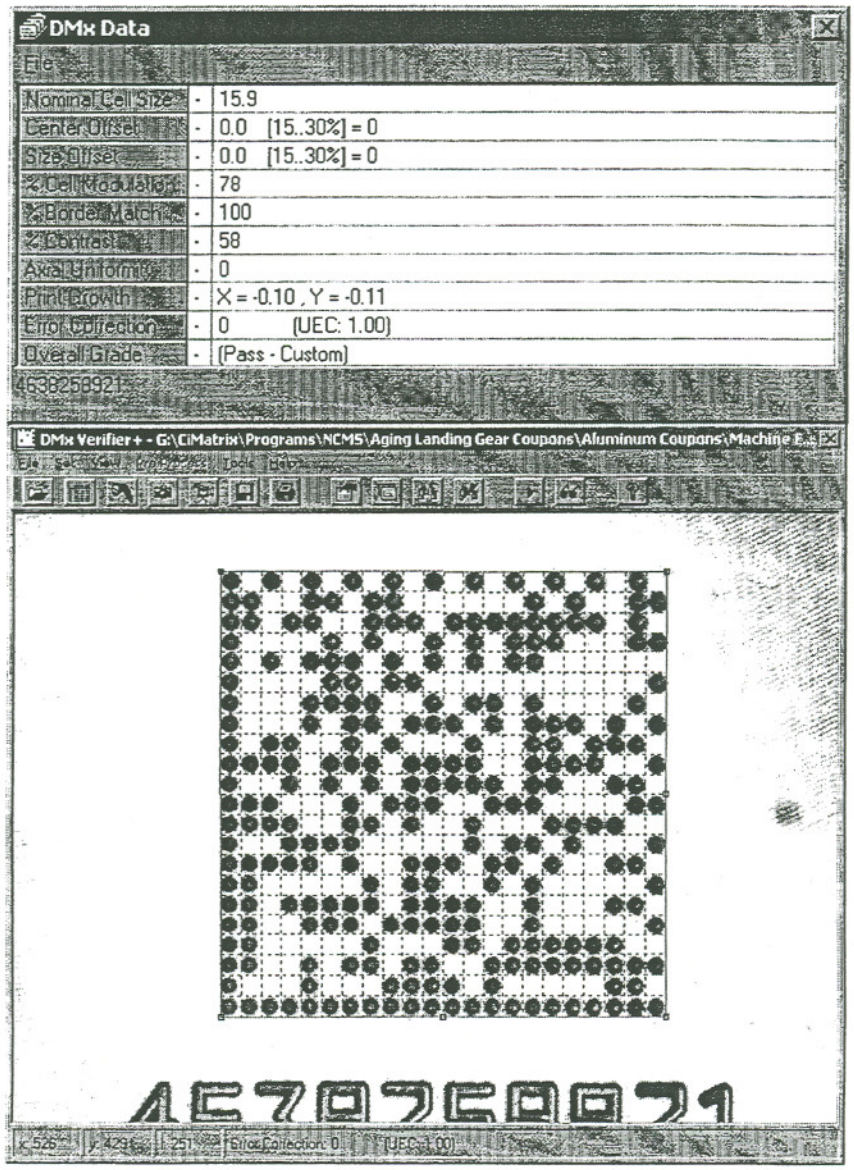

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APPENDIX D
COUPON OVERHAUL PROCESS DOCUMENTATION

COUPON S1A

Overhaul Process Data Sheet: Coupon S1A-17

Process		Date	Witness
1. Abrasive Blast per MIL-STD-1504 – Plastic Bead (5X)	60 PSI	12/8/2003	QC
2. Abrasive Blast per MIL-STD-1504 – Glass Bead (5X)	30 PSI	12/8/2003	QC
3. Abrasive Blast per MIL-STD-1504 – Garnet (5X)	60 PSI	12/8/2003	QC
4. Shot Peen per AMS-S-13165 – Mask (5X)	12 ALMEN	12/8/2003	QC
5. Clean STEAM CLEAN / SCOTCH PAD		12/9/2003	QC

Comments:
- NO CLOGGING; PLASTIC / GLASS / GARNET
- ADHESIVE / MASK RESIDUE IN SEVERAL MICRO MILL CELLS
- CLEAN / SCOTCH PAD REMOVED ADHESIVE / MASK RESIDUE

Overhaul Process Data Sheet: Coupon S1A-18

Process		Date	Witness
1. Abrasive Blast per MIL-STD-1504 – Plastic Bead (5X)	60 PSI	12/8/2003	QC
2. Abrasive Blast per MIL-STD-1504 – Glass Bead (5X)	30 PSI	12/8/2003	QC
3. Abrasive Blast per MIL-STD-1504 – Garnet (5X)	60 PSI	12/8/2003	QC
4. Shot Peen per AMS-S-13165 – No Mask (5X)	12 ALMEN	12/8/2003	QC
5. Clean STEAM CLEAN / SCOTCH PAD		12/9/2003	QC

Comments:
- NO CLOGGING: PLASTIC / GLASS / GARNET / SHOT

Overhaul Process Data Sheet: Coupon S1A-19

Process	Date	Witness
1. Abrasive Blast per MIL-STD-1504 – Plastic Bead (5X) 60 PSI	12/8/2003	QC
2. Abrasive Blast per MIL-STD-1504 – Glass Bead (5X) 30 PSI	12/8/2003	QC
3. Abrasive Blast per MIL-STD-1504 – Garnet (5X) 60 PSI	12/8/2003	QC
4. Cadmium Plate per MIL-STD-870, Type II, Class 1	12/9/2003	QC
5. Within 4 Hours After Cadmium Plate Bake For 24 Hours at 375°F ± 25°F	12/10/2003	QC
6. Clean DRY CLOTH	12/11/2003	QC

Comments:
- NO CLOGGING: PLASTIC/GLASS/GARNET
- PLATING OBSCURED SEVERAL MARKS

Overhaul Process Data Sheet: Coupon S1A-20

Process	Date	Witness
1. Abrasive Blast per MIL-STD-1504 – Plastic Bead (5X) 60PSI	12/8/2003	QC
2. Abrasive Blast per MIL-STD-1504 – Glass Bead (5X) 30 PSI	12/8/2003	QC
3. Abrasive Blast per MIL-STD-1504 – Garnet (5X) 60 PSI	12/8/2003	QC
4. Cadmium Plate per MIL-STD-870, Type II, Class 1	12/9/2003	QC
5. Within 4 Hours After Cadmium Plate Bake For 24 Hours at 375°F ± 25°F	12/10/2003	QC
6. Paint per MIL-STD-7179 One Coat Primer per MIL-P-85582 Type I, Class 2 Two Top Coats per MIL-C-85285, Type I	12/11/2003	QC
7. Clean DRY CLOTH	12/11/2003	QC

Comments:
- NO CLOGGING: PLASTIC/GLASS/GARNET
- PLATING AND PAINTING OBSCURED SEVERAL MARKS

COUPON A1A

Overhaul Process Data Sheet: Coupon A1A-17

Process		Date	Witness
1. Abrasive Blast per MIL-STD-1504 – Plastic Bead (5X)	60 PSI	12/8/2003	QC
2. Abrasive Blast per MIL-STD-1504 – Glass Bead (1X)	30 PSI	12/8/2003	QC
3. Shot Peen per AMS-S-13165 – Mask (5X)	12 ALMEN	12/8/2003	QC
4. Clean	STEAM CLEAN / SCOTCH PAD	12/9/2003	QC

Comments:
- NO CLOGGING: PLASTIC/GLASS
- ADHESIVE/MASK RESIDUE IN SEVERAL MICRO MILL CELLS
- CLEAN/SCOTCH PAD REMOVED ADHESIVE/MASK RESIDUE

Overhaul Process Data Sheet: Coupon A1A-18

Process		Date	Witness
1. Abrasive Blast per MIL-STD-1504 – Plastic Bead (5X)	60 PSI	12/8/2003	QC
2. Abrasive Blast per MIL-STD-1504 – Glass Bead (1X)	30 PSI	12/8/2003	QC
3. Shot Peen per AMS-S-13165 – No Mask (5X)	12 ALMEN	12/8/2003	QC
4. Clean	STEAM CLEAN / SCOTCH PAD	12/9/2003	QC

Comments:
- NO CLOGGING: PLASTIC/GLASS/SHOT
- SHOT PEENING DAMAGED SEVERAL MARKS

Overhaul Process Data Sheet: Coupon A1A-19

Process	Date	Witness
1. Abrasive Blast per MIL-STD-1504 – Plastic Bead (5X) 60 PSI	12/8/2003	QC
2. Abrasive Blast per MIL-STD-1504 – Glass Bead (1X) 30 PSI	12/8/2003	QC
3. Anodize per MIL-STD-8625, Type II, Class 1	12/9/2003	QC
4. Clean DRY CLOTH	12/11/2003	QC

Comments:
- NO CLOGGING: PLASTIC/GLASS

Overhaul Process Data Sheet: Coupon A1A-20

Process	Date	Witness
1. Abrasive Blast per MIL-STD-1504 – Plastic Bead (5X) 60 PSI	12/8/2003	QC
2. Abrasive Blast per MIL-STD-1504 – Glass Bead (1X) 30 PSI	12/8/2003	QC
3. Anodize per MIL-STD-8625, Type II, Class 1	12/9/2003	QC
4. Paint per MIL-STD-7179 One Coat Primer per MIL-P-85582 Type I, Class 2 Two Top Coats per MIL-C-85285, Type I	12/11/2003	QC
5. Clean DRY CLOTH	12/11/2003	QC

Comments:
- NO CLOGGING: PLASTIC/GLASS
- PAINTING OBSCURED SEVERAL MARKS

APPENDIX E
COUPON MARK DECODING SUMMARY DATA

COUPON S1A SUMMARY DATA SHEETS

Coupon S1A-17: Before Processing

Process Data: Coupon S1A-17 / 4340 Steel (260ksi UTS) Marked After Heat Treatment

0 Mark Per Drawing S1A

1 Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.2	0.002

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	4/6	10.2	0.001

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

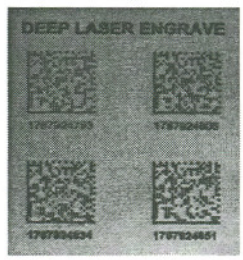
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.003
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.005
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.008
HRM	No	5/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.012
HRM	Yes	6/6	10.2	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

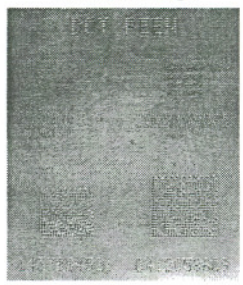
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.001
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.002
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	4.2	0.004
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.006
HRM	Yes	6/6	10.2	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.001
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	2/6	4.2	0.002
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	4.2	0.006
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	4.2	0.011
HRM	Yes	6/6	10.2	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

Coupon S1A-17: After Processing

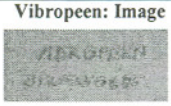
Process Data: Coupon S1A-17 / 4340 Steel (260ksi UTS) Marked After Heat Treatment

0	Mark Per Drawing S1A
1	Plastic Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
2	Glass Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 30psi, 6in to 12in Distance
3	Garnet Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
4	Shot Peen Per AMS-S-13165, 5X / 500% Surface Coverage with Marks Masked, 12 Almen Intensity
5	Steam Clean / Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.2	0.002

Vibropeen: Image



Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	5/6	10.2	0.001

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.002
HRM	No	4/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.004
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.008
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.012
HRM	Yes	6/6	10.2	NA

Deep Laser Engrave: Image

Dot Peen: Decoding Data

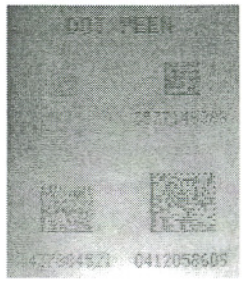
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.000
HRM	No	5/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.002
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	2.9	0.004
HRM	No	5/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.006
HRM	Yes	6/6	10.2	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	2.9	0.001
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.002
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.006
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.010
HRM	Yes	6/6	10.2	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1	Mark 2
Mark 3	Mark 4

Coupon S1A-18: Before Processing

Process Data: Coupon S1A-18 / 4340 Steel (260ksi UTS) Marked After Heat Treatment

0 Mark Per Drawing S1A

1 Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	8.6	0.003

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	8.6	0.000

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

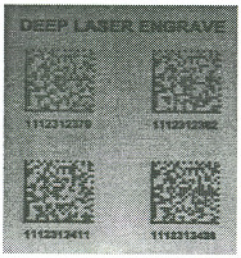
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.003
HRM	Yes	6/6	8.6	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.005
HRM	Yes	6/6	8.6	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.010
HRM	Yes	6/6	8.6	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.013
HRM	Yes	6/6	8.6	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

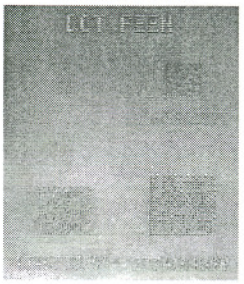
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.001
HRM	Yes	6/6	8.6	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.003
HRM	Yes	6/6	8.6	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.004
HRM	Yes	6/6	8.6	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.007
HRM	Yes	6/6	8.6	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.001
HRM	Yes	6/6	8.6	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.003
HRM	Yes	6/6	8.6	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.007
HRM	Yes	6/6	8.6	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.012
HRM	Yes	6/6	8.6	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

Coupon S1A-18: After Processing

Process Data: Coupon S1A-18 / 4340 Steel (260ksi UTS) Marked After Heat Treatment

0 Mark Per Drawing S1A
1 Plastic Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
2 Glass Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 30psi, 6in to 12in Distance
3 Garnet Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
4 Shot Peen Per AMS-S-13165, 5X / 500% Surface Coverage with Marks Unmasked, 12 Almen Intensity
5 Steam Clean / Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.4	0.002

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.4	0.000

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

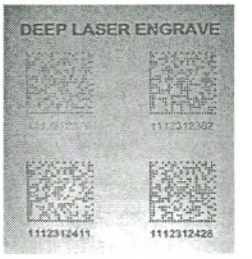
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.002
HRM	Yes	6/6	10.4	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.004
HRM	Yes	6/6	10.4	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.008
HRM	Yes	6/6	10.4	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.012
HRM	No	5/6	10.4	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

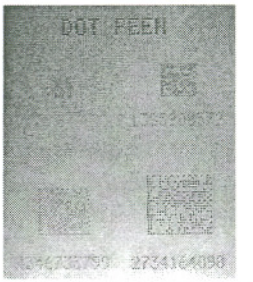
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.000
HRM	No	4/6	10.4	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.002
HRM	Yes	6/6	10.4	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.003
HRM	Yes	6/6	10.4	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.006
HRM	Yes	6/6	10.4	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	2.5	0.000
HRM	Yes	6/6	10.4	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.003
HRM	Yes	6/6	10.4	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.007
HRM	Yes	6/6	10.4	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.5	0.012
HRM	Yes	6/6	10.4	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry
Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.
Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.
HRM - Human Readable Mark: Three Operators with Two Manual Database Entries
Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.
Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

Coupon S1A-19: Before Processing

Process Data: Coupon S1A-19 / 4340 Steel (260ksi UTS) Marked After Heat Treatment

0 Mark Per Drawing S1A

1 Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	9.1	0.002

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	4/6	9.1	0.001

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

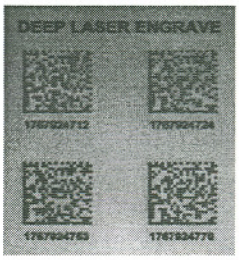
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.002
HRM	Yes	6/6	9.1	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.004
HRM	Yes	6/6	9.1	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.009
HRM	No	5/6	9.1	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.012
HRM	No	5/6	9.1	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.001
HRM	Yes	6/6	9.1	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.002
HRM	No	5/6	9.1	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.004
HRM	Yes	6/6	9.1	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.006
HRM	Yes	6/6	9.1	NA

Dot Peen: Image

Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.001
HRM	Yes	6/6	9.1	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.002
HRM	Yes	6/6	9.1	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.5	0.007
HRM	Yes	6/6	9.1	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.5	0.010
HRM	Yes	6/6	9.1	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

Coupon S1A-19: After Processing

Process Data: Coupon S1A-19 / 4340 Steel (260ksi UTS) Marked After Heat Treatment

0 Mark Per Drawing S1A
1 Plastic Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
2 Glass Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 30psi, 6in to 12in Distance
3 Garnet Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
4 Cadmium Plate Per MIL-STD-870, Type II, Class 1 / 24 Hour Bake at 375°F
5 Dry Cloth Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	12.5	0.003

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	0/6	12.5	0.000

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

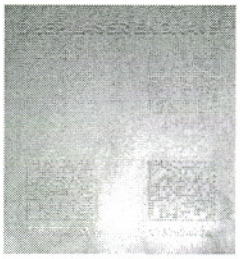
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.002
HRM	Yes	6/6	12.5	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.003
HRM	Yes	6/6	12.5	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.009
HRM	Yes	6/6	12.5	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.013
HRM	Yes	6/6	12.5	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

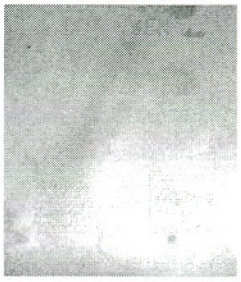
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	0/6	12.5	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.001
HRM	Yes	6/6	12.5	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.004
HRM	Yes	6/6	12.5	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.006
HRM	Yes	6/6	12.5	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	4/6	12.5	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.002
HRM	Yes	6/6	12.5	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.007
HRM	Yes	6/6	12.5	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.010
HRM	Yes	6/6	12.5	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry
Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.
Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.
HRM - Human Readable Mark: Three Operators with Two Manual Database Entries
Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.
Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

Coupon S1A-20: Before Processing

Process Data: Coupon S1A-20 / 4340 Steel (260ksi UTS) Marked After Heat Treatment

0 Mark Per Drawing S1A

1 Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	9.1	0.003

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	9.1	0.001

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

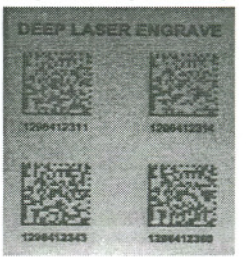
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.003
HRM	Yes	6/6	9.1	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	2/6	4.2	0.005
HRM	Yes	6/6	9.1	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.010
HRM	Yes	6/6	9.1	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.013
HRM	Yes	6/6	9.1	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	4.2	0.002
HRM	No	4/6	9.1	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.003
HRM	Yes	6/6	9.1	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.004
HRM	Yes	6/6	9.1	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.006
HRM	Yes	6/6	9.1	NA

Dot Peen: Image

Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.002
HRM	Yes	6/6	9.1	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	4.2	0.003
HRM	Yes	6/6	9.1	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	4.2	0.008
HRM	Yes	6/6	9.1	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	4.2	0.011
HRM	Yes	6/6	9.1	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

Coupon S1A-20: After Processing

Process Data: Coupon S1A-20 / 4340 Steel (260ksi UTS) Marked After Heat Treatment

0 Mark Per Drawing S1A
1 Plastic Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
2 Glass Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 30psi, 6in to 12in Distance
3 Garnet Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
4 Cadmium Plate Per MIL-STD-870, Type II, Class 1 / 24 Hour Bake at 375°F
5 Paint Per MIL-STD-7179: One Coat Primer Per MIL-P-85582, Type 1, Class 2 / Two Top Coats Per MIL-C-85285, Type 1
6 Dry Cloth Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	2/6	12.9	0.002

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	1/6	12.9	0.000

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.001
HRM	Yes	6/6	12.9	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.002
HRM	Yes	6/6	12.9	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.006
HRM	No	5/6	12.9	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.010
HRM	Yes	6/6	12.9	NA

Deep Laser Engrave: Image

Dot Peen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	0/6	12.9	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	Yes	6/6	12.9	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.001
HRM	Yes	6/6	12.9	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.001
HRM	Yes	6/6	12.9	NA

Dot Peen: Image

Micro Mill: Decoding Data

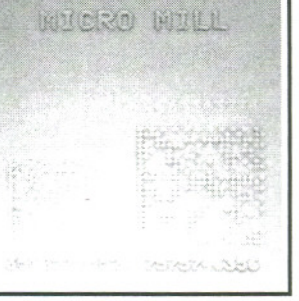
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	5/6	12.9	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.002
HRM	Yes	6/6	12.9	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.004
HRM	Yes	6/6	12.9	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.007
HRM	No	4/6	12.9	NA

Micro Mill: Image



Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry
Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.
Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.
HRM - Human Readable Mark: Three Operators with Two Manual Database Entries
Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.
Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

COUPON A1A SUMMARY DATA SHEETS

Coupon A1A-17: Before Processing

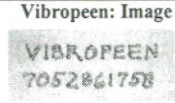
Process Data: Coupon A1A-17 / 7075-T73 Aluminum Marked After Heat Treatment

0	Mark Per Drawing A1A
1	Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.0	0.006

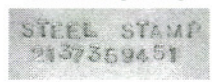
Vibropeen: Image



Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.0	0.008

Steel Stamp: Image



Deep Laser Engrave: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.002
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.003
HRM	Yes	6/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.007
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.012
HRM	Yes	6/6	10.0	NA

Deep Laser Engrave: Image

Dot Peen: Decoding Data

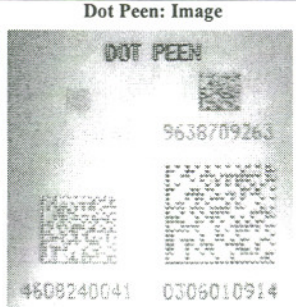
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.001
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.003
HRM	Yes	6/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	4/6	3.3	0.007
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.010
HRM	Yes	6/6	10.0	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.002
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.003
HRM	Yes	6/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	4/6	3.3	0.007
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	4/6	3.3	0.011
HRM	No	5/6	10.0	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry
Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.
Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.
HRM - Human Readable Mark: Three Operators with Two Manual Database Entries
Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.
Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1	Mark 2
Mark 3	Mark 4

Coupon A1A-17: After Processing

Process Data: Coupon A1A-17 / 7075-T73 Aluminum Marked After Heat Treatment

0	Mark Per Drawing A1A
1	Plastic Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
2	Glass Media Blast Per MIL-STD-1504, 1X / 100% Surface Coverage, 30psi, 6in to 12in Distance
3	Shot Peen Per AMS-S-13165, 5X / 500% Surface Coverage with Marks Masked, 12 Almen Intensity
4	Steam Clean / Scotch Pad Clean

Vibropeen: Decoding Data

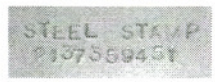
Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.0	0.006

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.0	0.008

Steel Stamp: Image



Deep Laser Engrave: Decoding Data

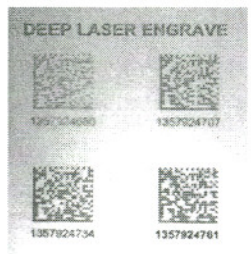
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.002
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.003
HRM	Yes	6/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.006
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.010
HRM	Yes	6/6	10.0	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.000
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.003
HRM	Yes	6/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.006
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.011
HRM	Yes	6/6	10.0	NA

Dot Peen: Image

Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.002
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.003
HRM	Yes	6/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.008
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.8	0.012
HRM	Yes	6/6	10.0	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1	Mark 2
Mark 3	Mark 4

Coupon A1A-18: Before Processing

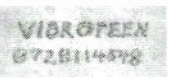
Process Data: Coupon A1A-18 / 7075-T73 Aluminum Marked After Heat Treatment

0	Mark Per Drawing A1A
1	Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.2	0.004

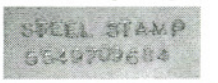
Vibropeen: Image



Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.2	0.008

Steel Stamp: Image



Deep Laser Engrave: Decoding Data

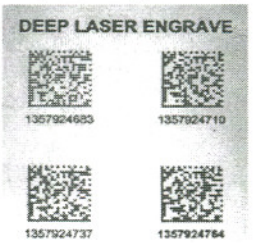
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.001
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.003
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.007
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.011
HRM	Yes	6/6	10.2	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

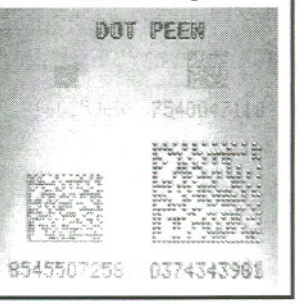
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.001
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.002
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.007
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.011
HRM	Yes	6/6	10.2	NA

Dot Peen: Image



Micro Mill: Decoding Data

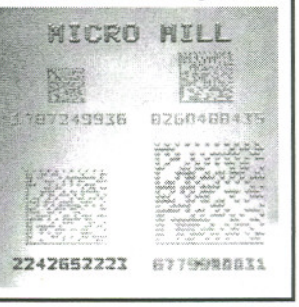
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.002
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.004
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	2.9	0.008
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	4/6	2.9	0.013
HRM	No	5/6	10.2	NA

Micro Mill: Image



Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1	Mark 2
Mark 3	Mark 4

Coupon A1A-18: After Processing

Process Data: Coupon A1A-18 / 7075-T73 Aluminum Marked After Heat Treatment

0	Mark Per Drawing A1A
1	Plastic Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
2	Glass Media Blast Per MIL-STD-1504, 1X / 100% Surface Coverage, 30psi, 6in to 12in Distance
3	Shot Peen Per AMS-S-13165, 5X / 500% Surface Coverage with Marks Unmasked, 12 Almen Intensity
4	Steam Clean / Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	0/6	3.0	0.001

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	0/6	3.0	0.004

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

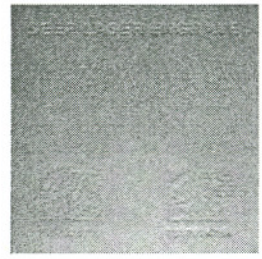
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	0/6	3.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.001
HRM	No	0/6	3.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.004
HRM	No	0/6	3.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.004
HRM	No	0/6	3.0	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

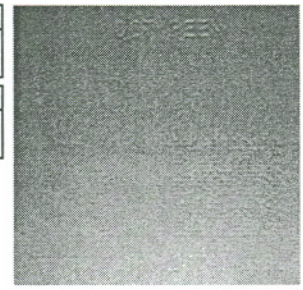
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	0/6	3.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	0/6	3.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	0/6	3.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.003
HRM	No	0/6	3.0	NA

Dot Peen: Image



Micro Mill: Decoding Data

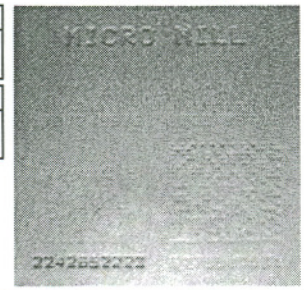
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	0/6	3.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.000
HRM	No	0/6	3.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.003
HRM	No	1/6	3.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.3	0.006
HRM	No	0/6	3.0	NA

Micro Mill: Image



Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

Coupon A1A-19: Before Processing

Process Data: Coupon A1A-19 / 7075-T73 Aluminum Marked After Heat Treatment

0	Mark Per Drawing A1A
1	Scotch Pad Clean

Vibropeen: Decoding Data

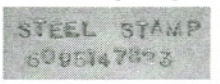
Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.2	0.007

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.2	0.009

Steel Stamp: Image



Deep Laser Engrave: Decoding Data

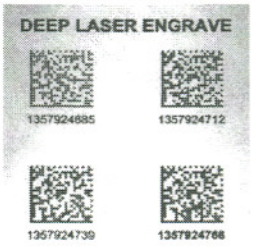
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.002
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.003
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.007
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.012
HRM	Yes	6/6	10.2	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

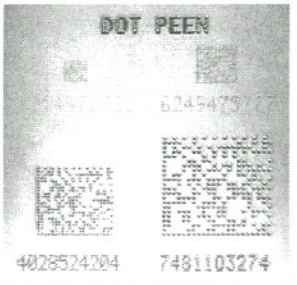
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.001
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.002
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.008
HRM	No	5/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	2/6	3.3	0.012
HRM	Yes	6/6	10.2	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.002
HRM	Yes	6/6	10.2	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.004
HRM	Yes	6/6	10.2	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.3	0.007
HRM	Yes	6/6	10.2	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	4/6	3.3	0.012
HRM	Yes	6/6	10.2	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1	Mark 2
Mark 3	Mark 4

Coupon A1A-19: After Processing

Process Data: Coupon A1A-19 / 7075-T73 Aluminum Marked After Heat Treatment

0	Mark Per Drawing A1A
1	Plastic Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
2	Glass Media Blast Per MIL-STD-1504, 1X / 100% Surface Coverage, 30psi, 6in to 12in Distance
3	Anodize Per MIL-STD-8625, Type II, Class 1
4	Dry Cloth Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	11.4	0.005

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	11.4	0.008

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

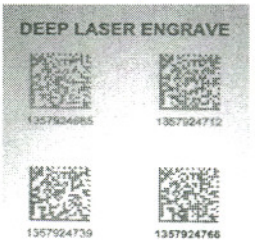
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.002
HRM	No	4/6	11.4	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.003
HRM	Yes	6/6	11.4	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.006
HRM	Yes	6/6	11.4	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.011
HRM	Yes	6/6	11.4	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

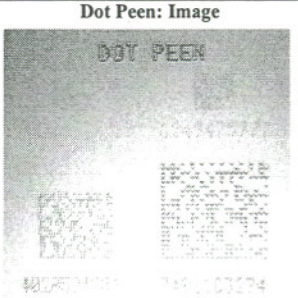
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.5	0.000
HRM	Yes	6/6	11.4	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.001
HRM	Yes	6/6	11.4	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.005
HRM	Yes	6/6	11.4	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.011
HRM	Yes	6/6	11.4	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.002
HRM	Yes	6/6	11.4	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.004
HRM	Yes	6/6	11.4	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.008
HRM	Yes	6/6	11.4	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.5	0.011
HRM	Yes	6/6	11.4	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4

Coupon A1A-20: Before Processing

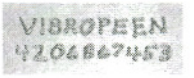
Process Data: Coupon A1A-20 / 7075-T73 Aluminum Marked After Heat Treatment

0	Mark Per Drawing A1A
1	Scotch Pad Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.0	0.006

Vibropeen: Image



Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	Yes	6/6	10.0	0.010

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

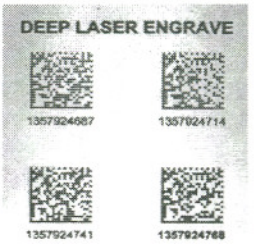
Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.7	0.002
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.7	0.003
HRM	No	5/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.7	0.007
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.7	0.012
HRM	Yes	6/6	10.0	NA

Deep Laser Engrave: Image



Dot Peen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	4/6	3.7	0.001
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.7	0.004
HRM	Yes	6/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.7	0.007
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	2/6	3.7	0.013
HRM	Yes	6/6	10.0	NA

Dot Peen: Image

Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.7	0.002
HRM	Yes	6/6	10.0	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	Yes	6/6	3.7	0.003
HRM	Yes	6/6	10.0	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	Yes	4/6	3.7	0.007
HRM	Yes	6/6	10.0	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	Yes	4/6	3.7	0.011
HRM	Yes	6/6	10.0	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1	Mark 2
Mark 3	Mark 4

Coupon A1A-20: After Processing

Process Data: Coupon A1A-20 / 7075-T73 Aluminum Marked After Heat Treatment

0	Mark Per Drawing A1A
1	Plastic Media Blast Per MIL-STD-1504, 5X / 500% Surface Coverage, 60psi, 6in to 12in Distance
2	Glass Media Blast Per MIL-STD-1504, 1X / 100% Surface Coverage, 30psi, 6in to 12in Distance
3	Anodize Per MIL-STD-8625, Type II, Class 1
4	Paint Per MIL-STD-7179: One Coat Primer Per MIL-P-85582, Type 1, Class 2 / Two Top Coats Per MIL-C-85285, Type 1
5	Dry Cloth Clean

Vibropeen: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	4/6	11.6	0.001

Vibropeen: Image

Steel Stamp: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
HRM	No	5/6	11.6	0.004

Steel Stamp: Image

Deep Laser Engrave: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.001
HRM	No	4/6	11.6	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.002
HRM	Yes	6/6	11.6	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.003
HRM	Yes	6/6	11.6	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.006
HRM	No	5/6	11.6	NA

Deep Laser Engrave: Image

Dot Peen: Decoding Data

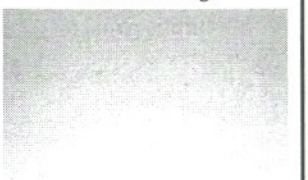
Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.000
HRM	No	0/6	11.6	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.000
HRM	No	5/6	11.6	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.001
HRM	Yes	6/6	11.6	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.004
HRM	Yes	6/6	11.6	NA

Dot Peen: Image



Micro Mill: Decoding Data

Mark 1	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.000
HRM	No	3/6	11.6	NA

Mark 2	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.001
HRM	Yes	6/6	11.6	NA

Mark 3	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.003
HRM	No	4/6	11.6	NA

Mark 4	Decode	Attempts	Time	Depth
MRM	No	0/6	3.1	0.005
HRM	Yes	6/6	11.6	NA

Micro Mill: Image

Decode: ***MRM - Machine Readable Mark:*** One Operator with MXi Handheld Reader Database Entry

Successful Decode - Yes: Mark decodes with 1/6 to 6/6 attempts.

Unsuccessful Decode - No: Mark does not decode with 0/6 attempts.

HRM - Human Readable Mark: Three Operators with Two Manual Database Entries

Successful Decode - Yes: Mark data correctly entered into a database with 6/6 attempts.

Unsuccessful Decode - No: Mark data incorrectly entered into a database with 0/6 to 5/6 attempts.

Attempts: Number of successful decodes in 6 attempts.

Time: Average time to decode the mark.

Depth: Average cell depth based on 3 dial gage measurements.

Mark 1 Mark 2

Mark 3 Mark 4